

RESPONSE TO NONFINAL OFFICE ACTION
Serial No. 10/774,298
Docket No. VEL03-GN003

REMARKS

Status of the Application

Claims 1, 7-9, 11-15, 17, 18, 20, 22, 26, 29, 31-33, 48, 53, 54, 57, 58, 61, 62, 64, 66, 68-74, 99, and 102-110 are pending and were rejected in the Office action mailed December 8, 2008 ("Office action"). Claims 2-6, 10, 16, 19, 21, 23-25, 27, 28, 30, 34-47, 49-52, 55, 56, 59, 60, 63, 65, 67, 75-98, 100, and 101 have been canceled. Reconsideration of the application is respectfully requested.

Objections to the Claims

Applicants gratefully acknowledge the withdrawal of the objection to claim 66.

Rejections Under 35 U.S.C. § 103

Gonjo In View Of Reiser

All of the rejections in the Office action rely on the combination of U.S. Patent No. 6,159,434 to Gonjo et al. ("Gonjo") in view of United Kingdom Patent Application Publication No. 2 128 013 to Reiser ("Reiser"), and it is respectfully submitted that the teachings of Gonjo and Reiser cannot properly be combined to yield the claimed invention. In short, the Office action selectively isolates specific teachings from each of the cited references. However, when the teachings of the references are considered in their entirety, it is clear that one of skill in the art at the time of the invention would not have been motivated to combine the teachings of the cited references in the manner proposed.

The Office action states, "Both Reiser and Gonjo have devices in a plate style configuration which are designed to prevent leakage of reactants/products out of the stack. In other words, while the structure of the stacks in Gonjo and Reiser are not identical, they are both designed to prevent outward leaks of products/reactants."¹ In particular, Gonjo discloses a fuel reforming apparatus which includes a non-leaking reactor module. Reiser discloses an intentionally inwardly leaking interface between a manifold and a fuel cell stack, and the manifold and stack are located within a pressure tight vessel.

¹ Office action, page 12.

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The Office action asserts that both Gonjo and Reiser disclose devices “which are designed to prevent the leakage of reactants/products out of the stack.”² Notably, the Office action argues not that it would be obvious to substitute one device for preventing leakage for another, but instead argues that it would somehow be obvious to use both the non-leaking reactor of Gonjo and the pressure vessel of Reiser to prevent leakage in combination and at the same time.

The Office action asserts that it would have been obvious to employ two redundant devices for preventing leakage out of the stack, even when each of the combined structures adequately prevents leakage by itself. One of ordinary skill would not use two redundant solutions to the same problem. One of skill in the art would recognize that employing redundant devices to solve the same problem raises costs, increases complexity, and is unnecessary.

In addition, to conclude that one of ordinary skill would combine the teachings of Reiser and Gonjo as proposed, the Office action disregards the teachings of the cited references in their respective entireties.³ For example, Gonjo discloses that leakage is preventable and uses high compression bonding to address the problem. As Gonjo’s high compression bonding solves the problem of leakage by itself, one of skill in the art would not look to Reiser for a second, redundant solution to an already-solved problem. In other words, the Office action’s alleged motivation to combine the references relies on solving an apparently nonexistent problem.

In direct contrast, Reiser clearly teaches that utilizing an intentionally leaking stack is advantageous over attempting to construct a non-leaking stack. Reiser notes that “[i]t is very difficult to completely prevent the escape of reactant gasses from the manifolds” under the operating conditions of its fuel cell.⁴ To solve this problem, Reiser states that his system, “rather than attempting to prevent leakage, allows leakage; however, the system assures that such leakage is into the reactant gas manifolds rather than out of the reactant gas manifolds.”⁵ The gas within the pressure vessel “continuously leaks past the seals 29 into the reactant gas

² Office action, page 12.

³ M.P.E.P. § 2141.02, entitled “PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS,” citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) (“A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.”).

⁴ Reiser, page 1, ll. 35-37.

⁵ Reiser, page 1, ll. 53-57.

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manifolds.”⁶ In fact, Reiser explicitly claims a stack and a manifold where the “gas seal means is constructed and arranged to permit continuous gas leakage therethrough, whereby inert gas continuously leaks from said gas space into said reactant gas manifold means through said gas seal means.”⁷ Thus, although Reiser teaches a pressure vessel, Reiser also promotes intentional inward leakage and discourages attempts to construct a sealed stack.

Simply put, if one inhibited leakage as taught by Gonjo, one would not be motivated to use the leaking structure taught by Reiser, and vice versa. Taken as a whole,⁸ utilizing both isolated microchannels and a pressure vessel would not have been obvious to one of skill in the art.

Applicants previously argued that modifying Gonjo to incorporate the teachings of Reiser as proposed in the final Office action would impermissibly require changing its principle of operation or, alternatively, would render Gonjo’s teachings unsatisfactory for their intended purpose. The Office action addresses these arguments, noting that “the precise structure of the stack of Reiser is irrelevant, as Gonjo was not modified by the fuel cell stack of Reiser, but rather with the pressure vessel of Reiser which prevents leakage of products and chemicals out of the stack configuration.” The Office action also states, “[A]lthough Applicant argues (on page 16) that combining Gonjo and Reiser would require a change in the intended purpose/operation of the references, such arguments are based on applying the plate structure of Reiser to the structure of Gonjo, which was never suggested by the examiner in the rejections.”⁹

However, as discussed above, the prior art must be considered in its entirety, including portions that would lead away from the claimed invention. As such, Reiser’s pressure vessel was not disclosed in isolation as suggested by the Office action; instead, Reiser’s teachings regarding intentional leakage require a containment device, a pressure vessel in this case. Similarly, the principle of operation of each of the references is relevant and must be reconciled. In

⁶ Reiser, page 2, ll. 76-77.

⁷ Reiser, page 3, ll. 31-35.

⁸ M.P.E.P. § 2141.02, entitled “THE CLAIMED INVENTION AS A WHOLE MUST BE CONSIDERED,” citing *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Norton Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983) (“In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious.”).

⁹ Office action, page 12.

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considering these two references, one of skill in the art would have seen two potential devices for preventing leakage and two conflicting principles of operation. Further, the cited references do not provide any guidance or suggestion regarding their combination, or even suggest that such a combination would be possible or desirable. Thus, it is not reasonable to isolate specific elements disclosed in the references, out of context, and ignore the remainders of the references.

Claims 1, 7-9, 11, 12, 17, 18, 20, 22, 26, 29, 31, 33, 57, 61, 62, 64, 66, 68-70, 74, 97-105, and 107-109

Claims 1, 7-9, 11, 12, 17, 18, 20, 22, 26, 29, 31, 33, 57, 61, 62, 64, 66, 68-70, 74, 97-105, and 107-109 stand rejected under 35 U.S.C. §103(a) as allegedly being obvious over Gonjo in view of Reiser. For the reasons discussed above, the teachings of Gonjo and Reiser cannot be combined to yield the claimed invention as proposed.

In addition, the Office action asserts that Gonjo discloses both a steam conduit and a hydrocarbon conduit, but refers to the same component in FIG. 1A of Gonjo for these two separate claim elements. It is respectfully submitted that the rejections of claims 1 and 17, and their respective dependent claims, are deficient for at least this additional reason.

Claims 106 and 110

Claims 106 and 110 stand rejected under 35 U.S.C. §103(a) as allegedly being obvious over Gonjo in view of Reiser and further in view of U.S. Patent No. 6,190,624 to Romatier ("Romatier"). The addition of Romatier to the combination of Gonjo and Reiser does not cure the deficiencies discussed above.

Claims 13-15, 32, 48, 53, 54, 58 and 71-73

Claims 13-15, 32, 48, 53, 54, 58 and 71-73 stand rejected under 35 U.S.C. §103(a) as allegedly being obvious over Gonjo in view of Reiser and further in view of U.S. Patent No. 4,167,915 Toole et al. ("Toole"). The addition of Toole to the combination of Gonjo and Reiser does not cure the deficiencies discussed above.

Further, Toole is not properly combinable with Gonjo and/or Reiser. Unlike Gonjo and Reiser, Toole discloses a batch process structure. One skilled in the art would not be motivated to combine the continuous process structures of Gonjo and Reiser with the batch process structure of Toole. Batch processes, at least to Toole, require opening both the housing 5 and the

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vessel 11 to insert the silicon wafers, followed by carrying out the process, followed by opening both the housing 5 and the vessel 11 to extract the wafers. There is simply no motivation to look to a batch process structure when confronted with problems of a continuous process. By combining the batch process structure of Toole with the continuous process structures of Gonjo and/or Reiser, the resulting combination would render Toole unfit for its intended purpose.¹⁰ For this reason alone, the combination is impermissible.

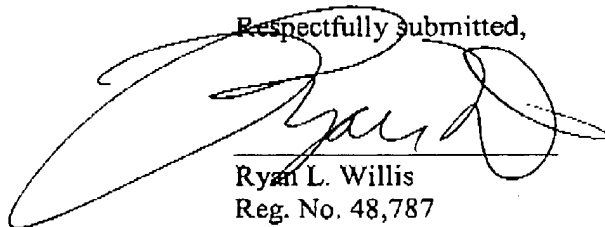
Conclusion

In light of the foregoing, it is respectfully submitted that claims 1, 7-9, 11-15, 17, 18, 20, 22, 26, 29, 31-33, 48, 53, 54, 57, 58, 61, 62, 64, 66, 68-74, 99, and 102-110, now pending, are patentably distinct from the references cited and are in condition for allowance. Reconsideration and withdrawal of the rejections and objection of record are respectfully requested.

The Commissioner for Patents is hereby authorized to charge any additional fees that may be required by this paper, or to credit any overpayment to Deposit Account 50-3072.

In the event that the Examiner wishes to discuss any aspect of this response, please contact the undersigned at the telephone number indicated below.

Respectfully submitted,



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¹⁰ M.P.E.P. § 2143.01 V citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) ("If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.")